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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,164	05/09/2001	Hirokazu Kondo	Q63442	2516

7590 05/13/2005

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EXAMINER	
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ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/851,164	KONDO, HIROKAZU	
	Examiner	Art Unit	
	James A Thompson	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 23 June 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-49 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 09 May 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/210,392.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 23 June 2004 have been fully considered but they are not persuasive.

Regarding page 14, line 13 to page 16, line 4: Applicant has not addressed the rejection of claims 1 and 7 made by Examiner on pages 4-5 of the previous office action, dated 08 March 2004, and repeated below in the present office action. As clearly demonstrated, Liang teaches converting the CMYK color space of a printer into a device-independent color space, namely the L*a*b* color space (column 11, lines 4-9 and lines 27-28 of Liang). Applicant is referring to a different embodiment discussed in the Liang reference in which the color space of two monitors are matched, such as shown in figure 2 of Liang, and not the embodiment discussed by Examiner in said previous office action. Further, the conversion is indeed performed using look-up tables (LUTs), as discussed on page 5, lines 17-19 of said previous office action. Specifically one-dimensional LUTs (figure 6(128) of Liang) convert a first colorimetric space to a second colorimetric space (column 10, lines 37-44 of Liang). The passage specifically cited by Examiner states:

> "The LUT **128** is a transform LUT which correlates a plurality of YMCK values to a second plurality of Y'C'M'K' values such that colored pixels produced using a set of YMCK values in printer **112** and a corresponding set of Y'M'C'K' values from the LUT **128** in printer **114** will be identical or virtually identical to the standard CIE average observer when viewed under similar illumination and surroundings."

Note that the LUT mentioned in the passage corresponds to a three-dimensional conversion, namely YMCK to Y'M'C'K' (K and K'

being dependent upon YMC and Y'M'C', respectively, thus giving three independent dimensions). Thus, the LUT clearly comprises a plurality of one-dimensional LUTs in order to convert from a first three-dimensional space to a second three-dimensional space. Further, column 11, lines 4-9 of Liang is cited in regards to converting the various YMCK colorimetric spaces into the independent L*a*b* color space. A portion of this cite states:

> "[I]t is preferred that the colorimeter output is in the Lab color space and the **LUTs** correlate $(Y,M,C,K)_n$ inputs to $(L,a,b)_n$ outputs for each of the printers **112** and **114**, respectively."

Therefore, a plurality of LUTs for converting a first colorimetric space to a second colorimetric space is indeed taught by Liang.

Regarding page 16, lines 5-8: Applicant is respectfully reminded that there must be a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. In said previous office action, Examiner stated:

> "A colorimetric measuring device (figure 7 (36) of Liang) measures the color patches (figure 7(132,134) of Liang) output from both printers (column 10, line 67 to column 11, line 1 of Liang) in CIELab color space (column 11, lines 4-6 of Liang). Said measurements are used to compile transfer functions in lookup tables (column 11, lines 2-3 of Liang) that are then used to construct models (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang). If the L*a*b* CIELab color space values are represented by the variables X_0, Y_0 and Z_0 for the first printer and X_α, Y_α and Z_α for the second printer, then the transfer function values stored in said lookup tables are represented by X_α/X_0, Y_α/Y_0 and Z_α/Z_0 since the transfer functions simply relate the value at one

> printer to the value at the other printer (column 11, lines 2-3 of Liang)." [page 9, lines 5-15 of said previous office action]

The transfer function can therefore be expressed with ratios, as recited in claims 18 and 21. Structurally, there is no difference between the conversion as performed by Liang and the corresponding limitations cited in claims 18 and 21. Merely expressing the same structure using different variables in a different form does not patentably distinguish the present claims over the prior art.

Regarding page 16, line 16 to page 17, line 2: In response to applicant's argument that Keating could not be combined Liang, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The teaching from Keating relied upon can be generalized to color halftoning on standard print medium. In other words, there is nothing about the teachings of Keating that have been relied upon by Examiner that require that said teachings *only* be used in color halftone printing upon textile fabrics.

Regarding page 17, lines 3-13: *Applicant argues:* "Also, both Keating and Liang are complete and functional in themselves, so there would be no reason to use parts from or add or substitute parts to any reference."

Examiner replies: The teachings and systems embodied within *any* patent are necessarily complete and functional in themselves. Otherwise, there would be no functional utility in a system taught within a patent. This does not in any way mean that teachings from one patent cannot be used by one of ordinary skill in the art to modify the teachings of another patent. Further, in response to Applicant's contention that "[t]o combine Keating and Liang would be cumbersome and excessive especially since they are directed towards different components," Examiner states that Applicant is merely speculating. Further, how cumbersome combining Keating and Liang may be does not in any way render the combination unobvious. As stated above, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 7-8, 13, 15-18, 21, 24, 26-28 and 45-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Liang (US Patent 5,579,031).

Regarding claims 1 and 7: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises color converting means (figure 8 (140) of Liang) given to a standard print medium, for converting device-dependent image data to first colorimetric data (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) can be considered the standard print medium since the CMYK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang) while the CMYK color signals are sent to an adaptor before being send to printer 2 (figure 6 (114) of Liang) (column 10, lines 34-37 of Liang), as can clearly be seen in figure 6 of Liang. A modeler (figure 8(140) of Liang) transforms the same CMYK signals to CIELab color space (column 11, lines 4-9 and lines 27-28 of Liang). CIELab color space is well-known to be a standard device-independent color space.

Said apparatus further comprises color correcting means (figure 6(122) of Liang). Said color correcting means is also shown in detail in figure 8 of Liang (column 4, lines 33-35 of Liang). Said color correcting means converts said first colorimetric data to second colorimetric data to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2

(figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).

Said apparatus further comprises an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of CMYK signals are sent to printer 2 (figure 6 (114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected CMYK values are used to create a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang).

Said color correcting means comprises one-dimensional lookup tables (figure 6(128) of Liang) for converting said first colorimetric data to said second colorimetric data (column 10, lines 37-44 of Liang).

Further regarding claim 1: The apparatus of claim 7 performs the method of claim 1.

Regarding claims 2 and 8: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises gradation converting means (figure 6(10) of Liang) for converting the gradation of device-dependent image data with respect to each color in order to match desired printing conditions (column 10, lines 28-33 of Liang). The workstation (figure 6(10) of Liang) converts the stored digital

color values for each pixel of a color image into CMYK values for a color printer (column 10, lines 28-33 of Liang). Since said CMYK values go straight to printer 1 (figure 6(112) of Liang) for printing (column 10, lines 33-34 of Liang), then the gradation must inherently be corrected for by said workstation in order for printer 1 to be capable of printing the image.

Said apparatus further comprises color converting means (figure 8(140) of Liang) corresponding to standard printing conditions given to a standard print medium, for converting the gradation-converted device-dependent image data to first colorimetric data (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) can be considered the standard print medium since the CMYK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang) while the CMYK color signals are sent to an adaptor before being send to printer 2 (figure 6(114) of Liang) (column 10, lines 34-37 of Liang). A modeler (figure 8(140) of Liang) transforms the same CMYK signals to CIELab color space (column 11, lines 4-9 and lines 27-28 of Liang).

Said apparatus further comprises color correcting means (figure 6(122) of Liang). Said color correcting means is also shown in detail in figure 8 of Liang (column 4, lines 33-35 of Liang). Said color correcting means converts said first colorimetric data to second colorimetric data to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2 (figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).

Said apparatus further comprises an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of CMYK signals are sent to printer 2 (figure 6 (114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected CMYK values are used to create a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang).

Further regarding claim 2: The apparatus of claim 8 performs the method of claim 2.

Regarding claims 18 and 21: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises color converting means (figure 8 (140) of Liang) given to a standard print medium, for converting device-dependent image data to first colorimetric data (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) is the standard print medium since the CMYK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang) while the CMYK color signals are sent to an adaptor before being send to printer 2 (figure 6(114) of Liang) (column 10, lines 34-37 of Liang), as can clearly be seen in figure 6 of Liang. A modeler (figure 8(140) of Liang) transforms the same CMYK signals to CIELab color space (column

11, lines 4-9 and lines 27-28 of Liang). CIELab color space is well-known to be a standard device-independent color space.

Said apparatus further comprises color correcting means (figure 6(122) of Liang). Said color correcting means is also shown in detail in figure 8 of Liang (column 4, lines 33-35 of Liang). Said color correcting means converts said first colorimetric data to second colorimetric data to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2 (figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).

Said apparatus further comprises an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of CMYK signals are sent to printer 2 (figure 6 (114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected CMYK values are used to create a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang).

Said color correcting means corrects the data based on the ratios of X_α/X_0, Y_α/Y_0 and Z_α/Z_0, where X_α, Y_α and Z_α are second colorimetric data values and X_0, Y_0 and Z_0 are first colorimetric data values for which the difference between the color of a desired print medium and the color of said standard print medium has been corrected (column 10, line 67 to column

11, line 9 of Liang). A colorimetric measuring device (figure 7 (36) of Liang) measures the color patches (figure 7(132,134) of Liang) output from both printers (column 10, line 67 to column 11, line 1 of Liang) in CIELab color space (column 11, lines 4-6 of Liang). Said measurements are used to compile transfer functions in lookup tables (column 11, lines 2-3 of Liang) that are then used to construct models (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang). If the L*a*b* CIELab color space values are represented by the variables X_0, Y_0 and Z_0 for the first printer and X_α, Y_α and Z_α for the second printer, then the transfer function values stored in said lookup tables are represented by X_α/X_0, Y_α/Y_0 and Z_α/Z_0 since the transfer functions simply relate the value at one printer to the value at the other printer (column 11, lines 2-3 of Liang).

Further regarding claim 18: The apparatus of claim 21 performs the method of claim 18.

Regarding claim 13: Liang discloses a proofer (figure 6 of Liang) for generating a color proof on a proof print medium (figure 7(132) of Liang) (column 10, lines 64-67 of Liang) having color different from the color of a desired print medium (column 10, line 67 to column 11, line 3 of Liang). The compilation of a transfer function between the two printers (column 11, lines 2-3 of Liang) inherently implies that the colors corresponding to the same CMYK values are different.

Said proofer comprises a color adjusting device (figure 6 (122) of Liang) for adjusting the difference between the color of said desired print medium and the color of a standard print medium (column 10, lines 34-44 of Liang). The color adjusting device (figure 6 (122) of Liang) is a device comprised of

several elements (column 10, lines 35-37 of Liang). Said elements work to convert the CMYK values for printer 1 (figure 6 (112) of Liang) into the CMYK values for printer 2 (figure 6 (114) of Liang) (column 10, lines 37-44 of Liang).

Said color adjusting device comprises one-dimensional lookup tables (figure 6(128) of Liang) for converting the color of a standard print medium to the color of said desired print medium (column 10, lines 37-44 of Liang).

Said proofer further comprises an output device (figure 6(114) of Liang) generating the color proof based on results of the color adjusting device (column 10, lines 37-44 of Liang).

Regarding claim 24: Liang discloses a proofer (figure 6 of Liang) for generating a color proof on a proof print medium (figure 7(132) of Liang) (column 10, lines 64-67 of Liang) having color different from the color of a desired print medium (column 10, line 67 to column 11, line 3 of Liang). The compilation of a transfer function between the two printers (column 11, lines 2-3 of Liang) inherently implies that the colors corresponding to the same CMYK values are different.

Said proofer comprises a color adjusting device (figure 6 (122) of Liang) for adjusting the difference between the color of said desired print medium and the color of a standard print medium (column 10, lines 34-44 of Liang). The adaptor (figure 6 (122) of Liang) is a device comprised of several elements (column 10, lines 35-37 of Liang). Said elements work to convert the CMYK values for printer 1 (figure 6(112) of Liang) into the CMYK values for printer 2 (figure 6(114) of Liang) (column 10, lines 37-44 of Liang).

Said color adjusting device adjusts color proof data based on the ratios of X_α/X_0, Y_α/Y_0 and Z_α/Z_0, where X_α, Y_α and Z_α are

colorimetric data values for producing a proper color on said desired print medium and X_0, Y_0 and Z_0 are colorimetric data values producing the proper color on said standard print medium (column 10, line 67 to column 11, line 9 of Liang). A colorimetric measuring device (figure 7(36) of Liang) measures the color patches (figure 7(132,134) of Liang) output from both printers (column 10, line 67 to column 11, line 1 of Liang) in CIELab color space (column 11, lines 4-6 of Liang). Said measurements are used to compile transfer functions in lookup tables (column 11, lines 2-3 of Liang) that are then used to construct models (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang). If the L*a*b* CIELab color space values are represented by the variables X_0, Y_0 and Z_0 for the first printer and X_α, Y_α and Z_α for the second printer, then the transfer function values stored in said lookup tables are represented by X_α/X_0, Y_α/Y_0 and Z_α/Z_0 since the transfer functions simply relate the value at one printer to the value at the other printer (column 11, lines 2-3 of Liang).

Said proofer further comprises an output device (figure 6 (114) of Liang) generating the color proof based on results of the color adjusting device (column 10, lines 37-44 of Liang).

Regarding claims 15 and 26: Liang discloses that said color adjusting device adjusts color by using a colorimetric data which is determined by colorimetrically measuring the color of said desired print medium with a colorimeter (figure 7(36) of Liang) (column 10, line 67 to column 11, line 3 of Liang). A colorimeter is used to measure the color patches of each printer (column 10, line 67 to column 11, line 1 of Liang) and use the colorimetric data to determine the difference between the color

patches in order to create the transfer functions of the two printers (column 11, lines 2-6 of Liang).

Regarding claims 16 and 27: Liang discloses a printing profile (figure 8(140,142) of Liang), wherein said color adjusting device adjusts color by a color converting means (figure 6(122) and figure 8 of Liang) behind said printing profile (column 11, lines 48-58 of Liang). The color converting means (figure 6(122) of Liang) is shown in detail in figure 8 of Liang (column 4, lines 33-35 of Liang). Said color converting means is used to adjust the color of the proofer (column 11, lines 48-58 of Liang) using the models for each printer (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang).

Regarding claims 17 and 28: Liang discloses a synthetic color converting means (figure 8 of Liang) at least combining said printing profile (figure 8(140,142) of Liang), a color converter for adjusting color (figure 8(176) and column 11, lines 54-58 of Liang), and a printer profile (figure 8(128) and column 10, lines 37-42 of Liang), for correcting color (column 10, lines 34-44 of Liang).

Regarding claims 45-48: Liang discloses that the first and second colorimetric data each comprise device independent color spaces (figure 8(164,168) and column 11, lines 38-47 of Liang). A first set of L*a*b* colorimetric values are produced from the YMCK color space of printer 1 (figure 8(168) and column 11, lines 38-42 of Liang). A second set of L*a*b* colorimetric values are produced from the YMCK color space of printer 2 (figure 8(164) and column 11, lines 38-43 of Liang). These two L*a*b* colorimetric spaces are used to convert from one printer to another (column 11, lines 43-47 of Liang).

Regarding claim 49: Liang discloses that the color of a standard print medium is represented as a first device-independent color space (figure 8(168) and column 11, lines 38-42 of Liang) and the color of the desired print medium represents a conversion of data of said first device-independent space (column 11, lines 48-58 of Liang).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-6, 9-12, 14, 19-20, 22-23, 25, 29-31, 33-35, 37-39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Keating (US Patent 5,619,434).

Regarding claims 3, 4, 9, 10, 19 and 22: Liang discloses that said color correcting means is generated by outputting color patches (column 10, lines 64-67 of Liang), whose colorimetric values are varied in a colorimetric color space, particularly CMYK (column 10, lines 50-63 of Liang), with said image output device (figure 6(112) of Liang), and comparing the color of the desired print medium with the colors of the color patches on the proof medium (column 10, line 67 to column 11, line 6 of Liang).

Liang does not disclose expressly that said colorimetric values are varied about the color of the standard print medium.

Keating discloses defining a central colorimetric value (column 9, lines 8-12 of Keating) about which colorimetric values are varied (column 9, lines 13-18 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of the color patches in a color space on a print medium, as taught by Liang, about a particular desired color sample, as taught by Keating. The motivation for doing so would have been to calibrate the printers (figure 7(112,114) of Liang) by varying the colors in an acceptable range about the color of the medium (column 9, lines 18-21 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 3, 4, 9, 10, 19 and 22.

Regarding claims 5, 6, 11, 12, 20 and 23: Liang does not disclose expressly that said color patches outputted on said proof medium comprise color patches whose colorimetric values L*a*b* are varied in a CIELAB color space about the color of said standard print medium.

Keating discloses that said color patches have colorimetric values L*a*b* which are varied in a CIELAB color space (column 9, lines 13-18 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of said color patches about the color of said standard print medium, as

discussed in the arguments regarding claims 3, 4, 9, 10, 19 and 22, using colorimetric values L*a*b* which are varied in a CIELab color space, as taught by Keating. The motivation for doing so would have been that CIELab values are a useful color space with which to measure color appearance (column 1, lines 16-25 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 5, 6, 11, 12, 20 and 23.

Regarding claims 14 and 25: Liang discloses that said proofer (figure 6 of Liang) outputs said proof medium having color patches whose colors are varied (column 10, lines 60-67 of Liang), and said color adjusting device (figure 6(122) of Liang) adjusts color by visually comparing the colors of the patches on said desired print medium (output of printer 1 (figure 7(112) of Liang)) with the colors of said color patches on said proof medium (output of printer 2 (figure 7(114) of Liang)) (column 10, line 67 to column 11, line 3 of Liang). The colors of the two media are visually compared with a colorimeter (figure 7(36) of Liang) in order to compile transfer functions between the two printers (column 10, line 67 to column 11, line 3 of Liang).

Liang does not disclose expressly comparing the color patches of the proof medium specifically to the color of the desired print medium.

Keating discloses comparing a range of colors (column 9, lines 13-21 of Keating) with the color of a cloth print medium (column 8, lines 3-5 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compare the colors of the color

patches on the proof medium, as taught by Liang, to the color of a medium, as taught by Keating. The motivation for doing so would have been to simulate a particularly colored medium for the outputs (column 3, lines 22-30 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 14 and 25.

Regarding claims 29, 33, 37 and 41: Liang does not disclose expressly that a color of a central color patch is the same as a color of the standard print medium.

Keating discloses varying colors around a central color (column 9, lines 13-18 of Keating), which is to be printed on a cloth print medium (column 8, lines 3-5 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the color patches printed on the proofing sheet, as taught by Liang, about a central color representative of a central color for a print medium, as taught by Keating. The motivation for doing so would have been to try to match the color of a medium within a particular acceptable color range (column 9, lines 13-17 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 29, 33, 37 and 41.

Regarding claims 30, 34, 38 and 42: Liang does not disclose expressly that the color patches comprise three-dimensional colorimetric values of L*a*b* and color patches are arranged as a*-b* planes in respective cross sections of different L*-axis values.

Keating discloses using a color space for color comparison that comprise three-dimensional colorimetric values of L*a*b*

(figure 6 and column 9, lines 38-44 of Keating). Said colorimetric values are arranged in an ellipsoid (column 9, lines 13-17 of Keating). Along the L*-axis of said ellipsoid are a*-b* plane cross-sections at each different value of L* (figure 6 of Keating). Keating further teaches correction by specifically incrementing the lightness value (column 11, lines 52-66 of Keating) and assigning a set of a*-b* values for each lightness value (column 12, lines 39-44 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use three-dimensional L*a*b* colorimetric values with a*-b* plane cross sections for different L*-values, as taught by Keating, for arranging the printing of the color patches, as taught by Liang. The motivation for doing so would have been that printing is performed by printers (figure 7(112,114) of Liang) which print on a medium that is inherently two dimensional, but color variations in all three colorimetric dimensions must be analyzed (column 11, lines 13-17 of Liang). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 30, 34, 38 and 42.

Regarding claims 31, 35, 39 and 43: Liang does not disclose expressly that each color patch is assigned an integer as a relative position from the central color patch according to each axis of L*a*b* for showing increment/decrement intervals of a colorimetric value and the color of the desired print medium is compared with the color patches, and wherein when no color patch is the same as the color of the desired print medium, a value between two closest color patches which is close to the

color of the desired print medium is described as a real number to describe a colorimetric value of the desired print medium.

Keating discloses varying color values in a three-dimensional L*a*b* color space (column 9, lines 38-44 of Keating) defined by an ellipsoid (figure 6 and column 9, lines 13-17 of Keating). The central value of said ellipsoid is the desired value for the color correction process (column 9, lines 13-21 of Keating). Keating further teaches correction by specifically incrementing the L*-value (column 11, lines 52-66 of Keating), with a*-b* plane cross sections at each L*-value (figure 6 of Keating), and assigning a set of a*-b* values for each L*-value (column 12, lines 39-44 of Keating). Each L*-value with an assigned a*-b* plane cross section is assigned a specific integer (figure 9 and column 11, lines 35-40 of Keating) according to the relative position from the central L*-value for showing increment/decrement intervals of the corresponding colorimetric value (column 11, lines 25-34 of Keating). Said a*-b* values are also assigned in an array (column 12, lines 39-44 of Keating) about the non-central L*-value (column 12, lines 34-35 of Keating) which is the same as assigning integers for said a*-b* values in order to show increment/decrement intervals of the corresponding colorimetric values, since the subscripts corresponding to the a*-b* array values are inherently integers based upon the ordering of said a*-b* values.

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to output color patches for the purpose of color correction and interpolate values not

specifically corrected for, as taught in Liang; for a set of L*a*b* colorimetric values with each represented L*-, a*-, and b*-value denoted by integers showing increment/decrement intervals, as taught by Keating. It would be natural and obvious to place the central L*a*b* value as the center patch since the other L*a*b* values are varied around said central value. The motivation for doing so would have been to store representative data points in computer memory for later recall (column 9, lines 18-24 and lines 30-35 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 31, 35, 39 and 43.

6. Claims 32, 36, 40 and 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Keating (US Patent 5,619,434) and Dundas (US Patent 5,604,567).

Regarding claims 32, 36, 40 and 44: Liang in view of Keating does not disclose expressly that a color difference ΔE in adjacent color patches on each axis of L*a*b* has a value between 1.5 and 2.0, inclusive.

Dundas discloses that color adjustment is performed for both fine and coarse difference ranges between adjacent color patches arranged about the central color patch (figure 9 and column 9, lines 15-20 of Dundas), depending on the range of color adjustment needed (column 9, lines 16-19 of Dundas). This is a more general and adaptable range definition than a color difference ΔE between 1.5 and 2.0, inclusive. A color difference ΔE between 1.5 and 2.0, inclusive, would be used for specific cases of color correction since ΔE between 1.5 and 2.0, inclusive, is a small perturbation in color values.

Liang in view of Keating is combinable with Dundas because they are from the same field of endeavor, namely color correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the color patches in a L*a*b* color space, as taught by Liang in view of Keating; using both fine and coarse color difference ranges, such as ΔE between 1.5 and 2.0 (inclusive) for adjacent patches, as taught by Dundas. The motivation for doing so would have been to incrementally observe color differences so that the color can be adjusted to a desired color (figure 9 and column 8, lines 37-47 of Dundas). Therefore, it would have been obvious to combine Dundas with Liang in view of Keating to obtain the invention as specified in claims 32, 36, 40 and 44.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624

JAT
18 April 2005

THOMAS D
~~TOMMY~~ LEE
PRIMARY EXAMINER